

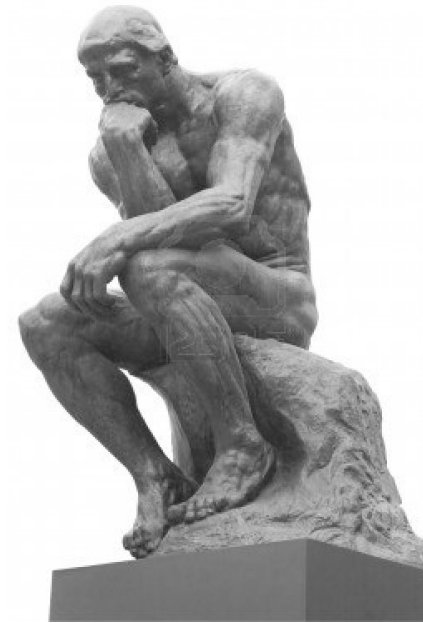
Questioning

Curiosity ~ Inquiry ~ Problem-Solving



"The scientific mind does not so much provide the right answers as ask the right questions."

"Once you have learned how to ask relevant and appropriate questions, you have learned how to learn and no one can keep you from learning whatever you want or need to know."



Who?

RESEARCH WORKSHOP	
Question Types	
Recall: What did _____ do? What was _____'s reaction? What did _____ say? What did _____ think? What did _____ feel?	R
Compare/Contrast: What are the similarities between _____ and _____? What are the differences between _____ and _____? What would have happened if _____? How did _____ change over time? How did _____ change over time?	C
How to Example: What are some examples of _____? What are some examples of _____? What are some examples of _____? What are some examples of _____?	Ex
Example to How: What kind of person is _____? What kind of person is _____? What kind of person is _____? What kind of person is _____?	Ex
Classification: What kind of person is _____? What kind of person is _____? What kind of person is _____? What kind of person is _____?	C

Daily
Question
wonderopolis.org

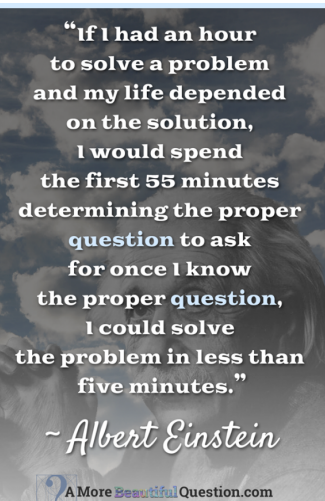
Why?

When?

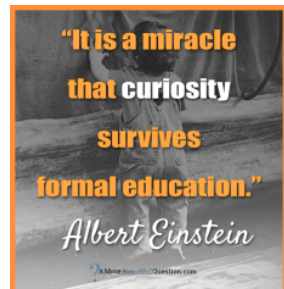
What?

Where?

How?



"Questions may be the most powerful technology we have ever created. Questions and questioning allow us to make sense of a confusing world. They are the tools that lead to insight and understanding."



Questioning

How can I integrate questioning into daily instruction?

Who teaches K-2?

Math?

Any administrators?

Science?

ELA?

Who teaches 3rd-5th?

Religious Studies?

Who teaches 6th-8th?

Any specialists (media, art, music, p.e.)?

Social Studies?

Who teaches 9th-12th?



Who writes essential questions?

Who uses exit tickets?

Who uses socratic seminars?

Who likes “unGoogleable” questions?

Who does research projects?

Who promotes reflection?

Who runs peer critiques?

Who runs online discussions?

Who uses KWL/H charts?

Religious Studies?

Proposed Agenda

- Why questioning?
- What is the reality in the classroom?
- Questions or Answers?
- Question Classification
- Essential Questions
- Reflective Questioning
- Inquiry Projects
- Socratic Questioning
- Mini Integration Ideas

Please Interrupt

Make suggestions, ask clarifying questions, ask probing questions, etc.

Jamie McKenzie

“Questions may be the most powerful technology we have ever created. Questions and questioning allow us to make sense of a confusing world. They are the tools that lead to insight and understanding.”

Dan Meyer

“Perplexity is the goal of engagement ... What matters most is the question, ‘Is the student perplexed?’ Our goal is to induce in the student a perplexed, curious state, a question in her head that math can help answer.”

Albert Einstein

“If I had an hour to solve a problem and my life depended on the solution, I would spend the first 55 minutes determining the proper question to ask... for once I know the proper question, I could solve the problem in less than five minutes.”

Neil Postman & Charles Weingartner

“Once you have learned how to ask relevant and appropriate questions, you have learned how to learn and no one can keep you from learning whatever you want or need to know.”

Claude Lévi-Strauss

“The scientific mind does not so much provide the right answers as ask the right questions.”

Isidor I. Rabi

“My mother made me a scientist without ever intending it. Every other Jewish mother in Brooklyn would ask her child after school: “So? Did you learn anything today?” But not my mother. She always asked me a different question. “Izzy,” she would say, “did you ask a good question today?” That difference--asking good questions-- made me become a scientist!”

What's the Reality in most Classrooms?

- Who asks most questions?
 - The Teacher
- What sort of questions do teachers ask?
 - Ones that don't require wait time
- When given the chance, what kinds of questions do students ask?
 - 99% of the questions kids ask in school are not information-seeking questions

Are Questions More Important Than Answers?

- show a desire to know more
 - promote inquiry
- requires knowledge & ability to see what you're missing (known unknowns)
- reveal more than answers
 - illuminate learning and misunderstanding
- fit with a “Google” mindset

Integration Idea 1

- Question Classification
 - Gather/brainstorm a range of questions
 - Ask students how they might be grouped/classified
 - Examine how others suggest classifying questions
 - Pick a method
- Questioning Toolkit (McKenzie)



RESEARCH WORKSHOP

Question Types

Recall:

Who is _____?
How did _____?
How many _____?
Where did _____?
What did _____?
What is _____?
When did _____?
Which is _____?

R

Cause/Effect:

What caused _____?
What are the effects of _____?
Why did _____?
Why do you think _____?
What would have happened if _____?
How did _____ effect _____?
(Some statement) Why?
If _____, then _____.



Idea to Example:

What are some examples of _____?
Find some examples of _____.
Give an example of _____.
What kinds of _____?
Name some _____.



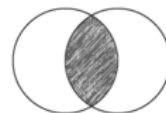
Example to Idea:

What kind of person was _____?
What is the main idea of _____?
_____ is an example of _____.
What word best describes _____?



Similarities:

How are _____ and _____ alike?
How was _____ the same as (like) _____?
What is the same about _____ and _____?
Compare _____ and _____.
_____ and _____ are alike in what ways?
_____ is to _____ as _____ is to _____.
Who is similar to _____?



Questioning Exercise

- Think - Pair/Compare - Share
 - How would you classify the following questions?
 - ♦ A map that shows population density is a type of ...
 - ♦ Which term means the pattern of weather over a long period of time?
 - ♦ Why do geographers use a variety of maps to represent the world?
 - ♦ Using the economic activity map, how would you describe Australia?
 - ♦ What physical feature caused basins to form?
 - ♦ How are mesas and plateaus alike? How are they different?
 - ♦ If you had your choice, would you choose to live in a Mediterranean climate or a tropical climate? Why?

Classification Practice

- Classify existing questions (quizzes, end of a section/chapter, etc.)
- Read a section from a book (or a web page), then Write your own non-recall questions
- Create your own quiz/test question bank (test prep)
- Note taking/research
- Commenting/feedback
- Categorize the types of questions the teacher asks before answering them

Essential Question Traits

- Get at the most important aspect(s) of a topic
- Require students to EVALUATE, SYNTHESIZE, or ANALYZE
- Problem-solving or decision-making
- Spark curiosity
- Personally meaningful (real life)
- Answers cannot be found easily in a book
- Example - Will insects “outlive” the human race? - or - How does the structure of insects enable them to survive?



Similarities And Differences

How does the culture in which a person lives affect that person's understanding of the world?

Overcoming Obstacles

What obstacles (physical, social, and mental) does an individual encounter and how does one resolve them?

Quest For Identity

What are ways individuals react when faced with challenges to their culture/customs/beliefs?

Sample Questions

Essential Questions

- How do the arts shape, as well as reflect, a culture?
- What do effective problem solvers do when they get stuck?
- How strong is the scientific evidence?
- Is there ever a "just" war?
- How can I sound more like a native speaker?
- Who is a true friend?

Not Essential Questions

- What common artistic symbols were used by the Incas and the Mayans?
- What steps did you follow to get your answer?
- What is a variable in scientific investigations?
- What key event sparked World War I?
- What are common Spanish colloquialisms?
- Who is Maggie's best friend in the story?

Sub-Question Traits

- Help answer essential question.
- Often include recall questions
- Provide factual information which is used to build the answer to the essential question.
- Help identify what you need to know to answer the foundation question.
- Examples - What are the main parts of an insect? Where can insects be found? What are some examples of insects living in “extreme” conditions? How are humans and insects similar/different? Are all insects viewed as pests? How smart are insects?

Questioning Exercise

- Think - Pair - Share
 - Using the question starters sheet, brainstorm a list of questions related to Insects
 - Share questions with a partner
 - Share questions with group
- Categorize questions & Fill in a Cluster Diagram
- Discuss Essential Question

Reflective Questioning

"We do not learn from experience ... we learn from reflecting on experience."

John Dewey

- What did you learn about your topic/tool?
 - What did you learn about yourself?
 - What did you learn about learning?

Reflective Questioning

- How do I know I learned _____?
- What helped my learning?
- What got in the way of my learning?
- What skills did I use that I already had?
- What did I learn that I can apply to future projects?
- How did I deviate from my plan? Why did I make that change?
- What is relevant and irrelevant? Important and unimportant?
- What breakthrough(s) did I have?
- How could I make it better? More interesting?
- What patterns did I experience/see? What connections did I make?
- In what ways do I think I could improve?
- What was easiest? Most challenging? Why?

The **Big 6**™ Problem-Solving

1. Task Definition

What do I need to do? or What question(s) do I need to answer?

- 1.1 Define the problem
- 1.2 Identify information needed in order to complete the task (to solve the problem)

2. Information Seeking Strategies

What resource(s) can I use?

- 2.1 Determine the range of possible sources (brainstorm)
- 2.2 Evaluate the different possible sources and select the best source(s)

3. Location and Access

Where can I find these resources?

- 3.1 Gather source(s)
- 3.2 Find information within source(s)

4. Use of Information

What can I use from these resources?

- 4.1 Engage (e.g., read, hear, view, touch) the information in a source
- 4.2 Extract relevant information from source(s)

5. Synthesis

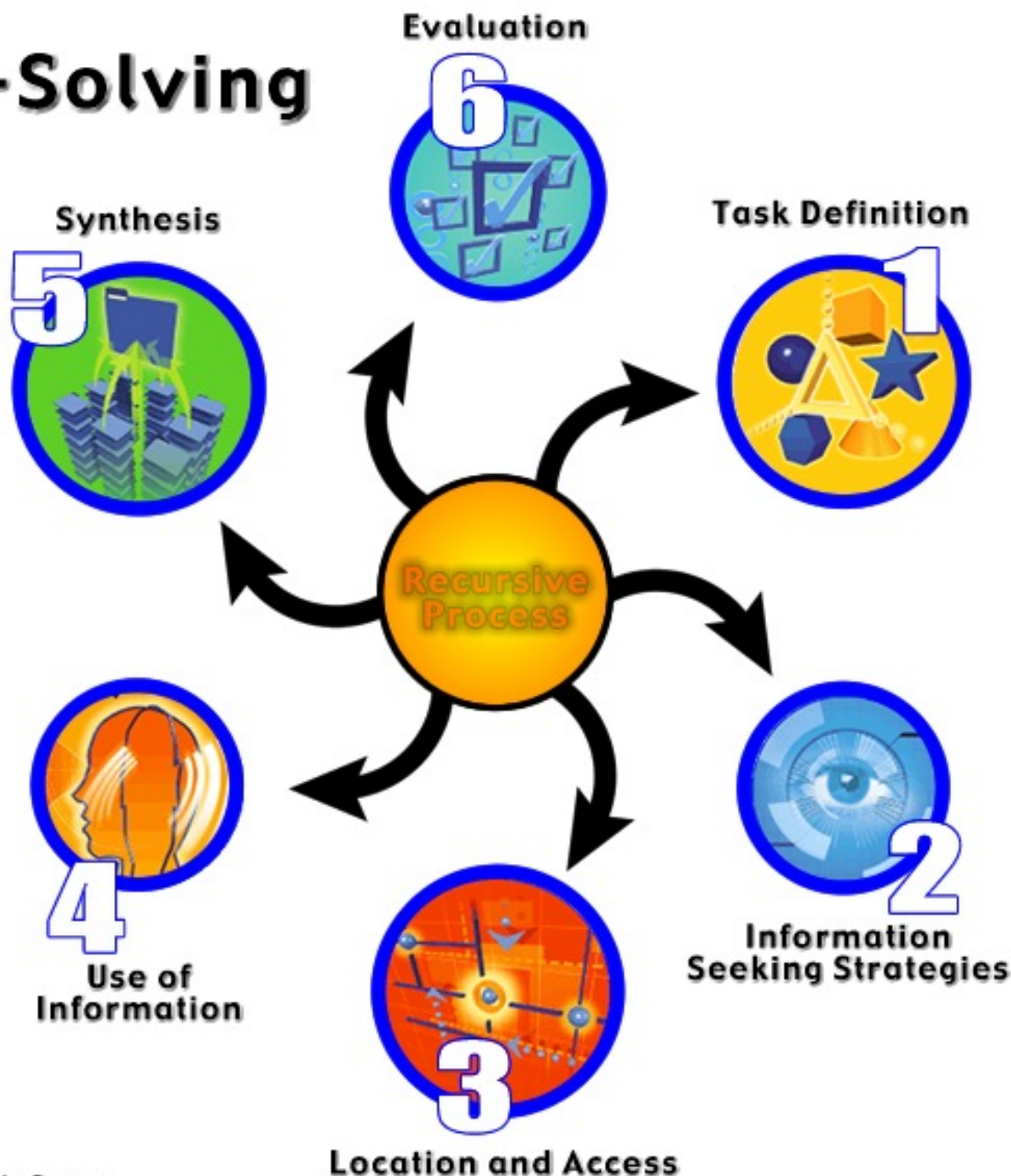
How can I show what I have learned?

- 5.1 Organize information from source(s)
- 5.2 Present (or represent) the information

6. Evaluation

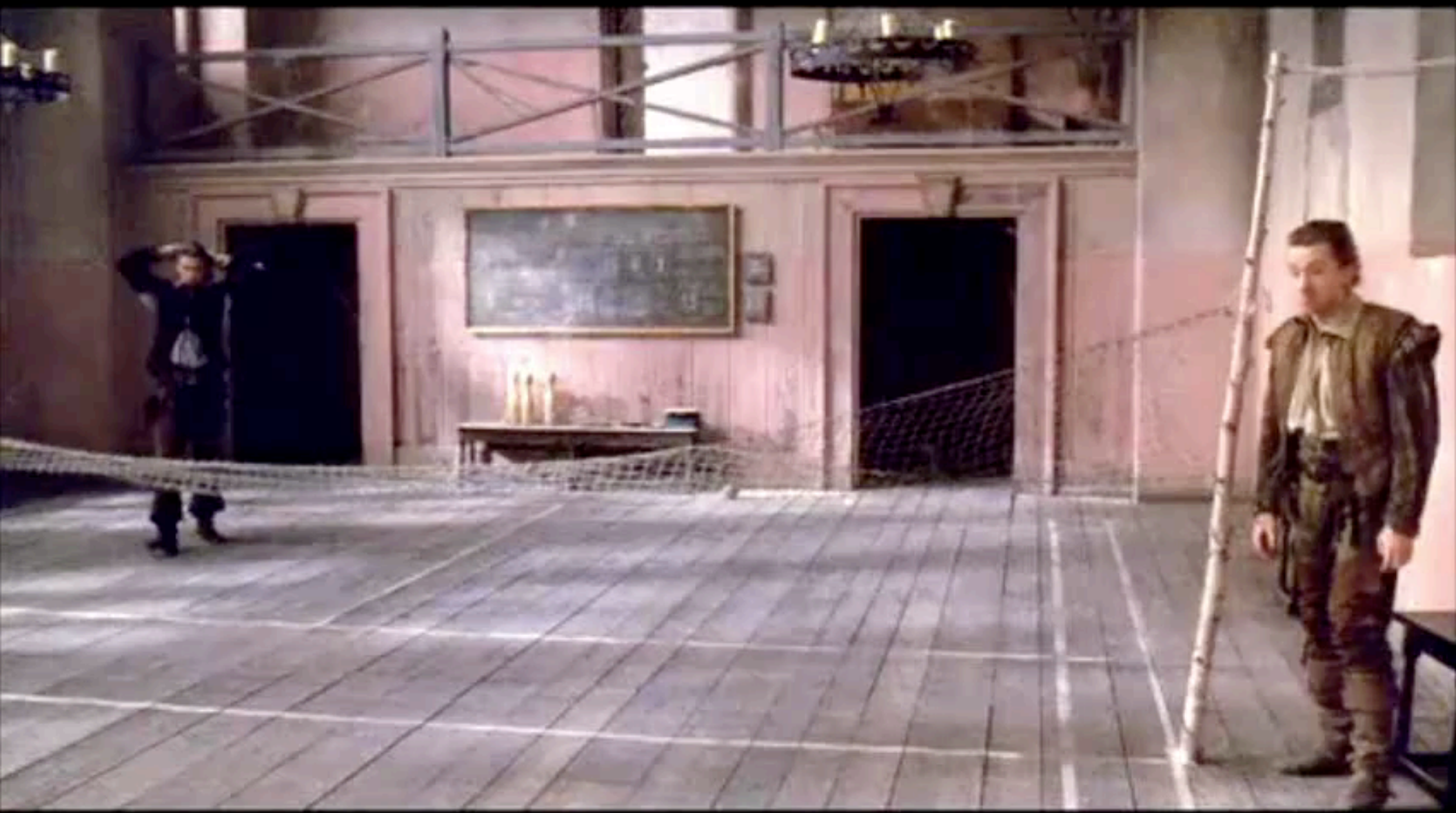
How will I know I did my job well?

- 6.1 Judge the product (effectiveness)
- 6.2 Judge the problem-solving process (efficiency)



Questioning Game

- Preparation for Socratic Seminar
- The rules ...



Socratic Questioning

- Play the questioning game ... slooowly
- Give the students socratic prompts to draft questions before seminar
- Practice using an online discussion tool (more time to think)



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Socratic Questioning Prompts

Questions for Clarification

- What do you mean by _____?
- What is your main point?
- How does _____ relate to _____?
- Could you put it another way?
- What do you think is the main issue here?
- Let me see if I understand you: do you mean _____ or _____?
- Jane, could you summarize in your own words what Richard has said?
- Richard, is that what you meant?
- Could you give me an example?
- Would this be an example: _____?
- Could you explain that further?

Questions about the Initial Question or Issue

- How can we find out?
- What does this question assume?
- Would _____ put the question differently?
- Can we break this question down at all?
- Does this question lead to other questions or issues?

Questions that Probe Assumptions

- What are you assuming?
- What could we assume instead?
- You seem to be assuming _____. Do I understand you correctly?
- How would you justify taking this for granted?
- ☐ Is this always the case? Why do you think the assumption holds here?

Questions that Probe Reasons and Evidence

- What would be an example?
- Could you explain your reasons to us?
- Are those reasons adequate?
- Do you have any evidence for that?
- How could we find out if that is true?

Questions that Probe Origin or Source Questions

- Where did you get this idea?
- Have you been influenced by media?
- What caused you to feel this way?

Questions that Probe Implications and Consequences

- What are you implying by that?
- What effect would that have?
- What is an alternative?
- If this is the case, then what else must be true?

Questions about Viewpoints or Perspectives

- How would other groups of people respond? Why?
- How could you answer the objection that ____ would make?
- Can anyone see this another way?
- What would someone who disagrees say?

Selected questions from a list compiled by Richard Paul, in *Critical Thinking: What Every Person Needs to Survive in a Rapidly Changing World* (Rohnert Park, CA: Center for Critical Thinking and Moral Critique, 1990).

For more information, contact Kathy Schmidt (232-1536) or Mary Crawford (232-9419).

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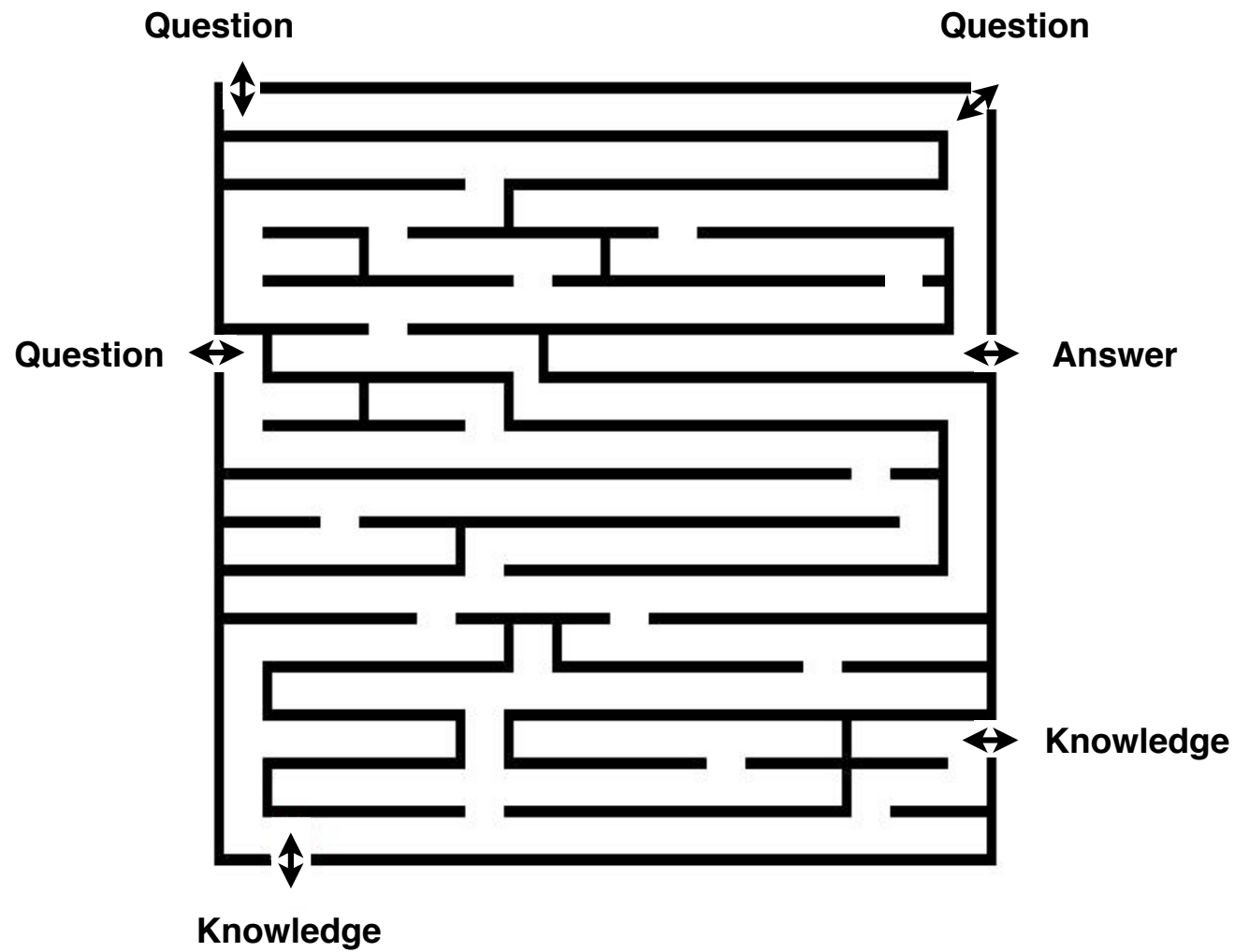
- Where did you get this idea?
- Have you been influenced by media?

Mini-Integration Ideas

- KWH or KWL Charts
- 1 Minute, 5 Minute, Dinner Question
- Think - Pair - Share
- Analyze interview questions
 - What questions were asked at the last debate? By news reporters? Sports reporters?
- Mini Challenges

Mini-Integration Ideas 2

- FAQs
- Exit Tickets (Google Form, Tweets, yellow stickies, index cards)
- Final bullets (current events, inquiry notes, etc.)
- Final step in Science Lab
- Common conclusion technique



Resources

- <http://balancedtech.wikispaces.com/>